

Claims

1. A transverse flux drive having a first component and a second component rotatable with respect to the first component, and first and second transverse flux motors coupled between the first and second components, each motor having a plurality of magnetic pole elements and a plurality of armature elements, wherein:

at least one of said pole elements and armature elements of one of said motors being axially movable to a position wherein it is magnetic uncoupled from its corresponding armature or pole element.

2. The transverse flux drive of claim 1, wherein:

the first component comprises a non-rotating stator and the second component comprises a rotor which rotates relative to the stator.

3. The transverse flux drive of claim 2, wherein:

the pole elements of each motor are coupled to rotate with the rotor.

4. The transverse flux drive of claim 3, wherein:

the pole elements of one motor are coupled to the rotor by members which prevent said pole elements from moving axially with respect to the rotor, and the pole elements of the other motor are coupled to the rotor and are axially movable with respect to the rotor.

5. The transverse flux drive of claim 1, wherein:

the armature elements are inductively coupled by a single continuous, exciter winding.

6. The transverse flux drive of claim 1, further comprising:

a shifting device is coupled to one of the pole or armature elements and is operable to shift said element axially during operation of the transverse flux drive.

7. The transverse flux drive of claim 1, wherein:

the shifting device is a hydraulic shifting device.

8. The transverse flux drive of claim 2, wherein:

the stator includes a housing which encloses a hydraulic chamber which slidably receives a piston which is coupled to an axially movable pole element.

9. The transverse flux drive of claim 8, wherein:

a spring member urges the piston to a first position wherein the movable pole element is in a magnetic circuit, and the piston is movable to a second position wherein the movable pole element is entirely or partially removed from said magnetic circuit.

10. The transverse flux drive of claim 1, further comprising:
a wheel hub for coupling to a wheel.

11. The transverse flux drive of claim 10, further comprising:
a rim for supporting a vehicle tire.

12. The transverse flux drive of claim 2, wherein:
the stator is connected to a vehicle axle.

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Transverse Flux Drive

Abstract of the Disclosure

A transverse flux drive includes a first component and a second component which is rotatable with respect to the first component. A pair of transverse flux motor units are coupled between the first and second components. Each motor unit includes a plurality of U-shaped armature elements which are coupled to the first component and which enclose an circumferentially extending exciter winding. Each motor unit also includes a plurality of permanent magnet pole elements coupled to the second component. The pole elements of one motor are axially movable to attenuate the magnetic flux coupling between the elements of the motor.

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